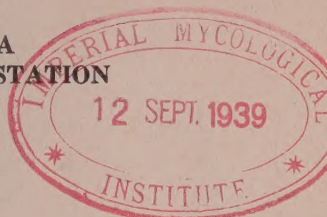


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ROSE CANKER

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The fact that rose plants are short-lived under Florida conditions is due to a great extent to destructive cankers which develop on the canes. Such cankers may appear on any part of the cane and spread upward and downward from the point of origin. They begin frequently in pruning wounds and spread down the cane more or less rapidly and kill part or all of it in a comparatively short time. This kind of canker often causes failure of plants within a few months after they are set in the garden. Although the list of canker diseases is still incomplete, several types have been described, including brown canker, crown canker, stem canker, brand canker and cane blight. Of these, brown canker has received most study, and since other canker diseases have many points in common with brown canker, this will be described as the typical canker disease.

Brown canker has been observed on about 175 varieties of roses, including Teas, Hybrid Teas, Hybrid Perpetuals, Pernetianas, Bengal or China roses, Hybrid Sweetbriars, Dwarf Polyanthas, Tea Polyanthas, Multiflora Hybrids, Wichuraiana Hybrids, Noisettes, and Noisette Hybrids. Rugosa, Moss and Brier roses appear to be resistant or immune to the disease.

CAUSE

Canker is caused by a parasitic fungus¹. Like other fungous diseases, canker is spread by spores of the causal fungus. Moisture and other environmental conditions being favorable, these spores soon germinate on the leaves, stems, or blossoms, penetrate the tissues and cause a dead spot. After developing for a time in the rose tissue, resulting in the destruction of invaded cells, the fungus produces more or less spherical fruiting structures within which large quantities of spores are formed. These are forced to the surface and are carried to other parts of the plant or to adjacent plants by wind, rain, pruning shears, and other agencies. Here they start new infections.

SYMPTOMS

In the case of most varieties, first signs of infection on the canes consists of spots varying in color from purple to white. The small cane lesions usually are slightly raised, circular, purple in color and quite superficial. Later they become grayish-white, and when large numbers of these tiny spots are massed together a whitish patch is produced. Sometimes little damage results the first year. Eventually, however, the superficial, white-colored lesions become surrounded by a purple margin which continues to enlarge, leaving a brown, dead area behind. In time the cane is girdled and killed. Cankers may extend for several inches down the canes, and upon reaching the crown kill other canes or even the entire plant.

Foliage and blooms are attacked. Leaf infections vary a great deal

¹Brown canker is caused by *Cryptosporella umbrina* Jenkins, formerly *Diaporthe umbrina*. Other canker diseases are caused by various other organisms.

in appearance, depending upon the type of rose. On some types of roses the spots are much like those on the canes, purple with or without white centers. Reddish spotting is typical for the Polyantha varieties, and on Hybrid Teas and Perpetuals dark gray, circular spots are produced on the upper surface of the leaves. Usually only the outer petals of blossoms are infected. Diseased petals become tan or brown-colored and dotted with the fruiting bodies of the fungus.

CONTROL

Careful selection of disease-free planting stock; the prompt removal and burning of all dead or cankered wood, old blossoms, and fallen foliage; attention to location, spacing and pruning of plants to insure quick drying; and the frequent application of a suitable fungicide are the essential measures in rose canker control. Newly-received plants should be examined critically for stem cankers and lesions, and all diseased plants rejected. In the removal of dead or diseased wood, cuts should be made well below the affected areas, since the tissues actually invaded extend beyond the part visibly diseased. In this operation it would be advisable to dip pruning shears or other instruments used in some sterilizing solution, as formaldehyde or alcohol, before each cut is made. Also, since many cankers originate with pruning wounds, coating the cut surfaces with some protective material (melted grafting wax or other good wound dressing) immediately after pruning will reduce the amount of dieback. A thorough application of a good fungicide at this time is also beneficial.

The importance of keeping the stems coated at all times with a fungicide cannot be overemphasized. Applications should be made at about weekly intervals during most of the year, frequent applications being particularly necessary during periods of rain, fog, or heavy dews. The fungicide may be applied at any time of the day, though to avoid burning, it is best to avoid mid-portions of hot days. It makes little difference whether the foliage is dry or moist, but dry foliage permits better coverage with dusts. It is particularly important that new growth be coated promptly.

Various points should be considered when selecting the fungicide. Preferably it should be effective, non-injurious to the plant, inconspicuous on the foliage, should spread and adhere well, and should be accessible, inexpensive, easily prepared and applied. Few materials do more than satisfy part of these requirements. Generally, copper compounds are preferable to the sulfurs for year-around application, since the latter cause serious foliage burning when applied during hot weather. Bordeaux mixture, most widely used of all copper sprays, is effective when applied frequently. However, bordeaux does not cover well, leaves an unsightly residue on the foliage, and adversely affects growth. The disadvantages of bordeaux mixture may be largely avoided by substituting Flordo spray², another home-made material. Flordo covers and adheres well, leaves little conspicuous residue, and is helpful in combatting aphids and other rose pests. Various proprietary materials are available, prominent among them being basic copper chloride, copper silicate, basic copper sulfate and red copper oxide. Usually these require the addition of a wetting agent to be most effective. Copper-lime dust, though generally less effective than the sprays, can be used to advantage where density of foliage interferes with coverage. Or, an alternation of spray and dust applications may be followed.

²Bluestone, soap, and ammonia spray (See Florida Agricultural Experiment Station Press Bulletin 504). Inexpensive soaps permitting elimination of ammonia are now available.